

Our New Battleships and T-Boats Lead World's Navies

Vessels of the North Carolina Class When Completed Will Put United States in Advance of Any Nation When Major Fighting Craft Are Considered—Fleet Submarines Under Construction Completely Overshadow Famous Deutschland in Size and Speed, Besides Possessing Latest Marvels in Mechanical Equipment

THE NEW YORK HERALD publishes herewith another chapter in its series describing the expansion of the United States Navy. Previous chapters have described the forty knot battle cruiser, to cost \$23,000,000; the mammoth dirigible, R-38, and the remarkable new flying boat, G.B.-1. THE HERALD recently published a cable article, from its Berlin correspondent, describing a new German invention by means of which submarines of 10,000 tons and capable of supporting armor may be possible. The announcement of this invention has a direct bearing upon the submarine programmes of the nations. The following article and the accompanying illustration tell just where the United States stands in this respect. The article also makes public the details of six battleships of the North Carolina class, which are to cost \$22,000,000 each.

THE first of the new fleet submarines now building for the United States Navy, which are the biggest, most improved craft of their kind now actually under construction in the world, are called the T type, probably because a use had been found previously for other letters of the alphabet. Three other fleet submarines now building at the Portsmouth Navy Yard and six for which bids are now under consideration will be known as the V-boats.

Though the new vessels contain many novel features of design, the most striking advance with regard to their construction is their speed and great cruising radius. Nearly 100 feet longer than the best types of German U-boats, they are swift enough to keep up with the main body of the fleet, and their huge oil tanks give them a cruising radius equal to that of the most modern battleship. They have a length of 300 feet, a beam of 27 feet and a tonnage of about 2,000 tons (not official). They will carry 100 men.

In speaking of the "most modern battleship," it may fittingly be said that the United States now has under construction six craft which, when completed, will be superior to any ship of their type afloat. They are the six battleships of the North Carolina class, authorized under the building programme of 1916.

Battleship Still the Fleet's Backbone, In Opinion of U. S. Naval Experts

Though Secretary Daniels and his advisers agree that the submarine proved in the world war that it has a field in naval warfare which can be filled by no other character of ship and are convinced that the American Navy cannot afford to be without an adequate number of the most improved types, they still believe that the battleship is the backbone of the fleet.

The battleship North Carolina and her five sister ships will be 684 feet long, 105 feet beam and will have a displacement of 43,200 tons. Her speed will be twenty-three knots an hour and she will have an armament of twelve 16-inch guns and sixteen 6-inch guns. The contract price for the hull and machinery of each of these giant craft will be in the neighborhood of \$22,000,000.

When these battleships and the six battle cruisers now under construction are completed, as they are expected to be by 1923, the United States, according to Secretary Daniels, will be the first naval power of the world in respect to major ships and gun power. In total tonnage and effective fighting ships the United States will be equalled by Great Britain.

Secretary Daniels Points Out Weakness of Our Navy Equipment

"This means," the Secretary has said, "that while our battleship force will be sufficiently powerful to cope with any navy in the world in a main fleet engagement between battleships, yet our main fleet would be open to torpedo attack by the enemy's torpedo forces. We would also be handicapped in obtaining information of the enemy's movements and maintaining the blockade of the enemy's ports. Due to this weakness in ships of this class, we would be handicapped in conducting attacks against the enemy's fleet with torpedoes."

In view of this statement, it is not difficult to understand why naval men are deeply interested in the new fleet submarines.

The following table shows the present strength of the navies of Great Britain and the United States with regard to submarine craft:

	No. of Ships	Tonnage
Great Britain.....	98	55,595
United States.....	54	35,361

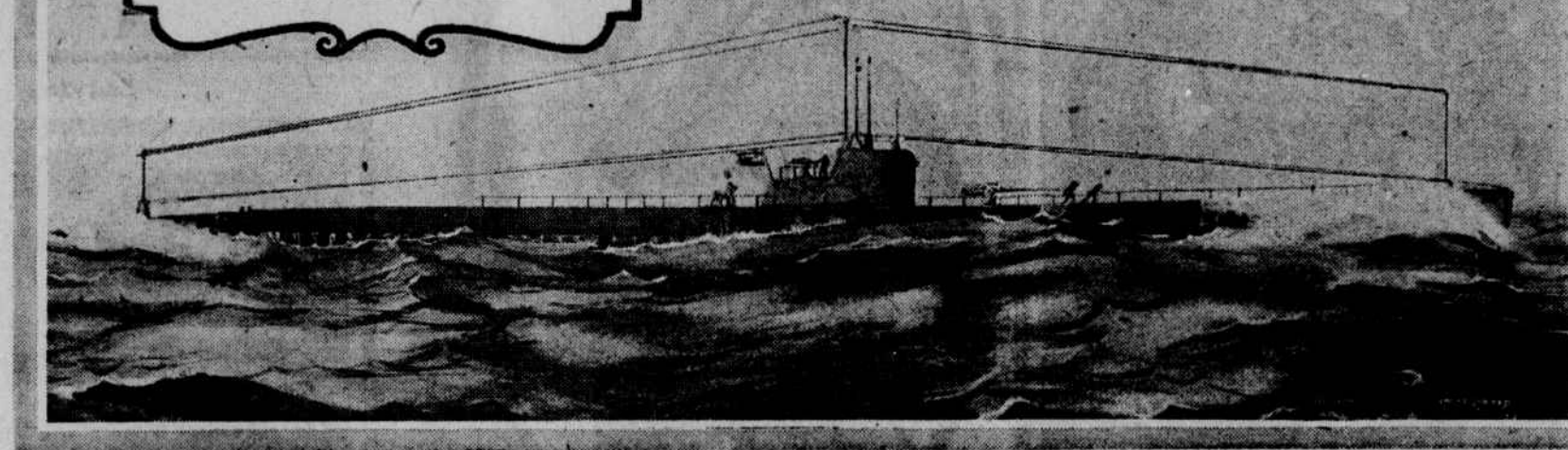
When submarine craft now authorized or projected are completed the table, including Japan, will read as follows:

	No. of Ships	Tonnage
Great Britain.....	117	107,475
United States.....	97	73,461
Japan.....	19	8,590

New Craft Several Knots Faster Than the Famous Deutschland

When the Deutschland poked her periscope out of the sea off New London after her epoch making voyage across the Atlantic the world looked on with incredulous amazement. Even well informed men found it hard to credit reports of her power and size. The new fleet submarines, however, are not only more than one hundred feet

THE NEW UNITED STATES SUBMARINE
Twelve Ships—Length, 300 feet; beam, 27 feet; tonnage, about 2,000
COST, \$5,000,000 EACH



longer and of nearly one thousand tons greater displacement than the Deutschland but are also several knots faster.

The present programme contemplates twelve fleet submarines, three to be known as T-boats and nine as V-boats. The first three are being built by the Electric Boat Company of New York and three of the V-boats are being built by the United States Government at the Portsmouth Navy Yard, work having been started on them early in 1920. Last August bids were opened for the remaining six, and these bids are now under consideration. The ships are expected to cost in the neighborhood of \$5,000,000 each.

The designs for all the fleet submarines were prepared by Admiral D. W. Taylor, chief constructor of the navy, who has made a careful study of all existing types of foreign craft.

The propelling machinery for surface operations consists of two main Diesel engines, located in the after part of the hull, driving directly on the main shafts, and two auxiliary engines in the forward part of the boat, driving electric generators, which in turn supply electric current to two main motors, one on each main shaft.

When operating submerged the vessel will be propelled by the two main electric motors, taking current from a powerful storage battery. It is estimated that the surface speed under full power will exceed twenty knots an hour and that nearly half that speed will be attainable in submerged condition. The fuel capacity of the ship is such

as to provide for a radius of action of approximately 10,000 miles, the vessel being entirely self-supporting during that time.

Though an American built the first practical submarine and Americans have been foremost in its development, the Diesel engine, which made possible the modern, ocean-going type of submersible, is the invention of a German. The German Navy refused to adopt the submarine so long as there was only gasoline to propel it on the surface. The U-1, forerunner of the long line of U-boats which was the scourge of the seas during the early part of the war, was not launched until 1906, after Dr. Diesel had got his motor into practicable working condition.

The advantages of the Diesel engine over the gasoline motor are that it gives more power, uses a cheaper grade of fuel and is much less dangerous. Three out of every four strokes of the piston of a gasoline motor waste power instead of producing it, while the Diesel is a two cycle engine, gaining power on every second stroke.

Three periscopes of the latest improved pattern will form part of the equipment of the fleet submarines, and each vessel will be provided with the latest type of radio telegraph outfit, both for surface and submerged work. The idea of the periscope dates from the middle of the nineteenth century, when French and Dutch inventors experimented with them. During the civil war, when the monitor Osage had run aground in the Red River, her chief engi-

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